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UBC
Proposal submitted to Ministry of Environment re Indian

Gladys Lake
Ref. No.: 205

Spatsizi Research

Stone Sheep

As the Gladys Lake Ecological Reserve is the only place in the province where we have good baseline information on this species, the Reserve should be the centre for sheep studies. Other advantages include: a research cabin, the Reserve is closed to hunting, and research funds might be obtained from the Ecological Reserves unit providing most of the work is carried out within the Reserve. A second hunted population of sheep should be studied for comparitive purposes - perhaps that at Marion Creek.

Specificially the research should include the following:

- inventory of the sheep population by sex, age, and size.
- seasonal distribution of sheep.
- determine the fecandity and mortality in this recovering, undisturbed population compared with the hunted population so as to determine the harvest limits.
- mark animals with paint, collars, or transmitters in order to determine movements.
- from above determine whether present boundaries of Reserve are adequate to protect the sheep populations.
- determine whether the concept of loss of tradition in habitat use due to extermination of old rams has any validity.
- monitor the interralationships between large herbivores and plant communities (see range study proposals for details).
- establish climatic stations in order to monitor the biophysical component of the sheep's movements.

Mountain Goat

Study of this species should be concentrated in the ecoreserve and at least one other locality for the same reasons as pointed out for sheep.

Baseline data is not as good in the Reserve as it is for sheep and this should be a first priority.

Specifically research should include:

- inventory of population.
- seasonal distribution and movements.
- compare recruitment and mortality in and outside of the Reserve.
- determine harvest limits by comparing the hunted and unhunted areas.
- monitor relationships between goat and plant communities (see range study proposal for details).
- relate goat movements and dynamics to the results of biophysical monitoring (weather stations).

Range Studies

objectives - to monitor interrelationships between (large) herbivores and plant communities.

rationale - habitat utilization by large herbivores is non-random. It is important to quantify the relationship between herbivores and the plant communities of certain key, critical, or limiting habitats.

methods - A) sampling, description, and mapping (using aerial photographs) of important plant communities. Set up permanent plots to establish baseline data and monitor long-term, successional change.

B) determination of importance of plant communities to herbivores, via aerial and ground observations, literature, oral history, pellet group counts, etc.

C) quantification of forage production and quality of the important plant communities, via a system of yield and utilization, plots, protected and unprotected from foraging animals.

D) quantification of forage utilization and wastage, using same plot system.

literature - cf. work by Luckhurst, Hoefs, Edwards et al.

duration - bulk of work could be completed in 3-4 years. Permanent plots should be monitored periodically ad infinitum.

Sheep range study has highest priority. Permanent plots should be established as soon as possible in projected study areas (e.g., Gladys Lake, Marion Creek). Goat, caribou and moose range studies could at later dates be phased into existing research programmes on these species, although an energetic and capable student might be able to do sheep and goat range studies at the same time (doubtful).

costs - estimated $15-20,000 per per range study per species per year (includes expenses and field salary for a graduate student, assumed to be supported by his university during the school year). Depends to great extent on dovetailing with related research projects.

benefits - knowledge of type, extent, quality and carrying capacity of the range; type of management required (if any); long-term successional trends and role of fire in establishment, maintenance, and improvement of range may become apparent.

additional considerations - some studies should eventually be done to quantify the relationships between plants and herbivorous small mammals and birds. These are probably more important in the energy flux of the total system than are the more popular plant-ungulate relationships.

LANDSAT imagery may be very useful in such range studies, but it needs to be evaluated by someone familiar with the available technology. Low level infra-red photography may be the best for these purposes.

Whereas critical sheep and goat range can be identified fairly accurately, only certain aspects of the diffuse caribou range could feasibly be quantified. For example, range studies on caribou perhaps would be most valuable if concentrated on early summer range (Fire Flats), rutting range (Tomias Mountain, Spatsizi Plateau proper), and forest winter range (Stikine and lower Spatsizi rivers).

Botanical Research

- more floristic work (reconnaissance collecting) needed in the park, especially at lower elevations and in the southern regions. Detailed collecting is not urgently needed, but of course all future researchers should endeavour to collect as much as possible.
- reconnaissance survey of vegetation has been done for Gladys Lake Reserve and surrounding portions of the park. However, more work needs to be done in other regions of the park, especially in the south, where there is evidently a moister climate. The valley-bottom vegetation of major rivers such as the Stikine and Spatsizi also needs study. This work could be accomplished by one graduate student within 1-2 years for perhaps $10,000 per year. It should be done fairly early in the overall scheme, and in conjunction with initial studies of caribou and moose in the southern park regions and along the major river valleys.
- detailed floristic and vegetation work is desirable, but realistically only in the long-term. Short term emphasis should be on reconnaissance level studies useful to animal researchers.
- some scheme to assess the impact of trampling (both by horses and humans) should be devised; to determine the degree and extent of damage, and how long it takes the vegetation to recover (system of sample plots needed.)